2012 August 16, 17, 18 (Thur, Fri, Sat)

GMT	ARIES	VENUS -4.3		MARS +1.1		JUPITER -2.2		SATURN +0.7	
	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
16 Thursday 00	324°47'.5	226°28'.6	19°59'.3 N	121°35'.2	10°02'.3 S	253°31'.1	21°31'.9 N	120°53'.0	7°25'.6 S
01	339°50'.0	241°28'.5	59'.3	136°36'.2	02'.9	268°33'.2	31'.9	135°55'.3	25'.7
02	354°52'.4	256°28'.4	59'.4	151°37'.2	03'.5	283°35'.3	32'.0	150°57'.6	25'.7
03	9°54'.9	271°28'.3	59'.4	166°38'.2	04'.1	298°37'.4	32'.0	165°59'.9	25'.8
04	24°57'.4	286°28'.2	59'.4	181°39'.2	04'.7	313°39'.5	32'.0	181°02'.2	25'.9
05	39°59'.8	301°28'.1	59'.5	196°40'.2	05'.3	328°41'.6	32'.1	196°04'.5	26'.0
06	55°02'.3	316°28'.0	59'.5	211°41'.2	05'.9	343°43'.7	32'.1	211°06'.7	26'.1
07	70°04'.8	331°27'.9	59'.5	226°42'.2	06'.6	358°45'.8	32'.2	226°09'.0	26'.1
08	85°07'.2	346°27'.7	59'.6	241°43'.2	07'.2	13°47'.8	32'.2	241°11'.3	26'.2
09	100°09'.7	1°27'.6	59'.6	256°44'.2	07'.8	28°49'.9	32'.3	256°13'.6	26'.3
10	115°12'.2	16°27'.5	59'.6	271°45'.2	08'.4	43°52'.0	32'.3	271°15'.9	26'.4
11	130°14'.6	31°27'.4	59'.7	286°46'.2	09'.0	58°54'.1	32'.3	286°18'.2	26'.5
12	145°17'.1	46°27'.3	19°59'.7 N	301°47'.2	10°09'.6 S	73°56'.2	21°32'.4 N	301°20'.5	7°26'.5 S
13	160°19'.6	61°27'.2	59'.7	316°48'.2	10'.2	88°58'.3	32'.4	316°22'.7	26'.6
14	175°22'.0	76°27'.1	59'.8	331°49'.2	10'.8	104°00'.4	32'.5	331°25'.0	26'.7
15	190°24'.5	91°27'.0	59'.8	346°50'.2	11'.4	119°02'.5	32'.5	346°27'.3	26'.8
16	205°26'.9	106°26'.9	59'.8	1°51'.2	12'.0	134°04'.6	32'.6	1°29'.6	26'.8
17	220°29'.4	121°26'.8	59'.9	16°52'.2	12'.6	149°06'.6	32'.6	16°31'.9	26'.9
18	235°31'.9	136°26'.7	59'.9	31°53'.2	13'.2	164°08'.7	32'.6	31°34'.2	27'.0
19	250°34'.3	151°26'.6	59'.9	46°54'.2	13'.8	179°10'.8	32'.7	46°36'.4	27'.1
20	265°36'.8	166°26'.4	59'.9	61°55'.1	14'.4	194°12'.9	32'.7	61°38'.7	27'.2
21	280°39'.3	181°26'.3	20°00'.0 N	76°56'.1	15'.0	209°15'.0	32'.8	76°41'.0	27'.2
22	295°41'.7	196°26'.2	00'.0	91°57'.1	15'.6	224°17'.1	32'.8	91°43'.3	27'.3
23	310°44'.2	211°26'.1	00'.0	106°58'.1	16'.2	239°19'.2	32'.9	106°45'.6	27'.4
17 Friday 00	325°46'.7	226°26'.0	20°00'.0 N	121°59'.1	10°16'.8 S	254°21'.3	21°32'.9 N	121°47'.9	7°27'.5 S
01	340°49'.1	241°25'.9	00'.0	137°00'.1	17'.4	269°23'.4	32'.9	136°50'.1	27'.6
02	355°51'.6	256°25'.7	00'.1	152°01'.1	18'.0	284°25'.5	33'.0	151°52'.4	27'.6
03	10°54'.1	271°25'.6	00'.1	167°02'.1	18'.6	299°27'.6	33'.0	166°54'.7	27'.7
04	25°56'.5	286°25'.5	00'.1	182°03'.1	19'.2	314°29'.7	33'.1	181°57'.0	27'.8
05	40°59'.0	301°25'.4	00'.1	197°04'.1	19'.8	329°31'.7	33'.1	196°59'.3	27'.9
06	56°01'.4	316°25'.3	00'.2	212°05'.1	20'.4	344°33'.8	33'.2	212°01'.6	28'.0
07	71°03'.9	331°25'.1	00'.2	227°06'.1	21'.0	359°35'.9	33'.2	227°03'.8	28'.0
08	86°06'.4	346°25'.0	00'.2	242°07'.1	21'.6	14°38'.0	33'.2	242°06'.1	28'.1
09	101°08'.8	1°24'.9	00'.2	257°08'.0	22'.2	29°40'.1	33'.3	257°08'.4	28'.2
10	116°11'.3	16°24'.8	00'.2	272°09'.0	22'.8	44°42'.2	33'.3	272°10'.7	28'.3
11	131°13'.8	31°24'.6	00'.2	287°10'.0	23'.4	59°44'.3	33'.4	287°13'.0	28'.4
12	146°16'.2	46°24'.5	20°00'.2 N	302°11'.0	10°24'.0 S	74°46'.4	21°33'.4 N	302°15'.2	7°28'.4 S
13	161°18'.7	61°24'.4	00'.3	317°12'.0	24'.6	89°48'.5	33'.4	317°17'.5	28'.5
14	176°21'.2	76°24'.3	00'.3	332°13'.0	25'.2	104°50'.6	33'.5	332°19'.8	28'.6
15	191°23'.6	91°24'.1	00'.3	347°14'.0	25'.8	119°52'.7	33'.5	347°22'.1	28'.7
16	206°26'.1	106°24'.0	00'.3	2°15'.0	26'.4	134°54'.8	33'.6	2°24'.4	28'.8
17	221°28'.5	121°23'.9	00'.3	17°16'.0	27'.0	149°56'.9	33'.6	17°26'.7	28'.8
18	236°31'.0	136°23'.8	00'.3	32°17'.0	27'.6	164°59'.0	33'.7	32°28'.9	28'.9
19	251°33'.5	151°23'.6	00'.3	47°17'.9	28'.2	180°01'.1	33'.7	47°31'.2	29'.0
20	266°35'.9	166°23'.5	00'.3	62°18'.9	28'.8	195°03'.2	33'.7	62°33'.5	29'.1
21	281°38'.4	181°23'.4	00'.4	77°19'.9	29'.4	210°05'.3	33'.8	77°35'.8	29'.2
22	296°40'.9	196°23'.2	00'.4	92°20'.9	30'.0	225°07'.4	33'.8	92°38'.1	29'.2
23	311°43'.3	211°23'.1	00'.4	107°21'.9	30'.6	240°09'.5	33'.9	107°40'.3	29'.3
18 Saturday 00	326°45'.8	226°23'.0	20°00'.4 N	122°22'.9	10°31'.2 S	255°11'.6	21°33'.9 N	122°42'.6	7°29'.4 S
01	341°48'.3	241°22'.8	00'.4	137°23'.9	31'.8	270°13'.7	33'.9	137°44'.9	29'.5
02	356°50'.7	256°22'.7	00'.4	152°24'.8	32'.4	285°15'.8	34'.0	152°47'.2	29'.6
03	11°53'.2	271°22'.5	00'.4	167°25'.8	33'.0	300°17'.9	34'.0	167°49'.5	29'.6
04	26°55'.7	286°22'.4	00'.4	182°26'.8	33'.6	315°20'.0	34'.1	182°51'.7	29'.7
05	41°58'.1	301°22'.3	00'.4	197°27'.8	34'.2	330°22'.1	34'.1	197°54'.0	29'.8
06	57°00'.6	316°22'.1	00'.4	212°28'.8	34'.8	345°24'.2	34'.2	212°56'.3	29'.9
07	72°03'.0	331°22'.0	00'.4	227°29'.8	35'.4	0°26'.3	34'.2	227°58'.6	30'.0
08	87°05'.5	346°21'.8	00'.4	242°30'.8	36'.0	15°28'.4	34'.2	243°00'.9	30'.0
09	102°08'.0	1°21'.7	00'.4	257°31'.7	36'.6	30°30'.5	34'.3	258°03'.1	30'.1
10	117°10'.4	16°21'.6	00'.4	272°32'.7	37'.2	45°32'.6	34'.3	273°05'.4	30'.2
11	132°12'.9	31°21'.4	00'.4	287°33'.7	37'.8	60°34'.7	34'.4	288°07'.7	30'.3
12	147°15'.4	46°21'.3	20°00'.4 N	302°34'.7	10°38'.4 S	75°36'.8	21°34'.4 N	303°10'.0	7°30'.4 S
13	162°17'.8	61°21'.1	00'.4	317°35'.7	39'.0	90°38'.9	34'.4	318°12'.3	30'.4
14	177°20'.3	76°21'.0	00'.4	332°36'.7	39'.6	105°41'.0	34'.5	333°14'.5	30'.5
15	192°22'.8	91°20'.8	00'.4	347°37'.6	40'.2	120°43'.1	34'.5	348°16'.8	30'.6
16	207°25'.2	106°20'.7	00'.4	2°38'.6	40'.8	135°45'.2	34'.6	3°19'.1	30'.7
17	222°27'.7	121°20'.5	00'.4	17°39'.6	41'.4	150°47'.3	34'.6	18°21'.4	30'.8
18	237°30'.2	136°20'.4	00'.4	32°40'.6	42'.0	165°49'.4	34'.6	33°23'.6	30'.8
19	252°32'.6	151°20'.2	00'.4	47°41'.6	42'.6	180°51'.5	34'.7	48°25'.9	30'.9
20	267°35'.1	166°20'.1	00'.4	62°42'.5	43'.2	195°53'.6	34'.7	63°28'.2	31'.0
21	282°37'.5	181°19'.9	00'.3	77°43'.5	43'.8	210°55'.7	34'.8	78°30'.5	31'.1
22	297°40'.0	196°19'.8	00'.3	92°44'.5	44'.4	225°57'.8	34'.8	93°32'.8	31'.2
23	312°42'.5	211°19'.6	00'.3	107°45'.5	45'.0	240°59'.9	34'.8	108°35'.0	31'.3
	M.P. 02:13	v -0'.1	d 0'.0	v 1'.0	d 0'.6	v 2'.1	d 0'.0	v 2'.3	d 0'.1

STARS		
Name	SHA	Dec
Acamar	315°18'.7	40°15'.0 S
Achernar	335°26'.9	57°10'.0 S
Acrux	173°10'.5	63°10'.4 S
Adhara	255°13'.2	28°59'.3 S
Aldebaran	290°50'.1	16°32'.0 N
Alioth	166°21'.5	55°53'.7 N
Alkaid	152°59'.5	49°15'.3 N
Alnair	27°43'.9	46°53'.7 S
Alnilam	275°47'.1	1°11'.6 S
Alphard	217°57'.0	8°42'.9 S
Alphecca	126°11'.5	26°40'.6 N
Alpheratz	357°43'.8	29°09'.7 N
Altair	62°08'.5	8°54'.4 N
Ankaa	353°15'.9	42°13'.9 S
Antares	112°26'.8	26°27'.6 S
Arcturus	145°56'.3	19°07'.2 N
Atria	107°28'.9	69°03'.2 S
Avior	234°18'.8	59°33'.0 S
Bellatrix	278°32'.8	6°21'.6 N
Betelgeuse	271°02'.1	7°24'.5 N
Canopus	263°56'.8	52°42'.0 S
Capella	280°35'.5	46°00'.4 N
Deneb	49°31'.4	45°19'.8 N
Denebola	182°34'.5	14°30'.1 N
Diphda	348°56'.2	17°54'.8 S
Dubhe	193°53'.0	61°41'.0 N
Elnath	278°13'.5	28°36'.9 N
Eltanin	90°46'.1	51°29'.6 N
Enif	33°47'.3	9°56'.2 N
Fomalhaut	15°24'.2	29°33'.0 S
Gacrux	172°01'.9	57°11'.3 S
Gienah	175°53'.1	17°36'.8 S
Hadar	148°48'.9	60°26'.3 S
Hamal	328°01'.3	23°31'.3 N
Kaus Aust.	83°44'.3	34°22'.6 S
Kochab	137°20'.2	74°06'.5 N
Markab	13°38'.6	15°16'.6 N
Menkar	314°15'.6	4°08'.4 N
Menkent	148°08'.4	36°26'.0 S
Miaplacidus	221°40'.7	69°46'.2 S
Mirfak	308°41'.1	49°54'.1 N
Nunki	75°58'.7	26°16'.7 S
Peacock	53°19'.5	56°41'.5 S
Polaris	317°57'.8	89°18'.8 N
Pollux	243°28'.7	27°59'.6 N
Procyon	245°00'.6	5°11'.5 N
Rasalhague	96°06'.8	12°33'.3 N
Regulus	207°44'.4	11°54'.3 N
Rigel	281°12'.7	8°11'.2 S
Rigil Kent	139°52'.6	60°53'.4 S
Sabik	102°13'.0	15°44'.3 S
Schedar	349°40'.7	56°36'.3 N
Shaula	96°22'.5	37°06'.7 S
Sirius	258°34'.5	16°44'.0 S
Spica	158°32'.0	11°13'.6 S
Suhail	222°53'.3	43°29'.1 S
Vega	80°39'.0	38°48'.1 N
Zuben'ubi	137°06'.1	16°05'.6 S

	SHA	Mer.Pass.
Venus	260°39'.3	08:54
Mars	156°12'.5	15:51
Jupiter	288°34'.6	07:02
Saturn	156°01'.2	15:50

SUN				MOON				
GHA	Dec	GHA	v	Dec	d	HP
178°55'.8	13°40'.3 N	200°22'.0	11'.2	15°08'.3 N	8'.6	56'.4
193°55'.9	39'.5	214°52'.2	11'.3	14°59'.7 N	8'.7	
208°56'.0	38'.7	229°22'.5	11'.2	51'.0	8'.8	56'.5
223°56'.2	38'.0	243°52'.7	11'.3	42'.2	8'.9	
238°56'.3	37'.2	258°23'.0	11'.3	33'.3	8'.9	
253°56'.4	36'.4	272°53'.3	11'.3	24'.4	9'.1	
268°56'.6	35'.6	287°23'.6	11'.3	15'.3	9'.1	56'.6
283°56'.7	34'.8	301°53'.9	11'.3	06'.2	9'.2	
298°56'.8	34'.0	316°24'.2	11'.3	13°57'.0 N	9'.2	
313°57'.0	33'.2	330°54'.5	11'.3	47'.8	9'.4	
328°57'.1	32'.4	345°24'.8	11'.4	38'.4	9'.4	56'.7
343°57'.2	31'.6	359°55'.2	11'.3	29'.0	9'.5	
358°57'.3	13°30'.8 N	14°25'.5	11'.4	13°19'.5 N	9'.6	56'.7
13°57'.5	30'.0	28°55'.9	11'.4	09'.9	9'.7	
28°57'.6	29'.2	43°26'.3	11'.4	00'.2	9'.7	56'.8
43°57'.7	28'.4	57°56'.7	11'.4	12°50'.5 N	9'.8	
58°57'.9	27'.6	72°27'.1	11'.4	40'.7	9'.9	
73°58'.0	26'.8	86°57'.5	11'.4	30'.8	9'.9	56'.9
88°58'.1	26'.0	101°27'.9	11'.5	20'.9	10'.0	
103°58'.3	25'.2	115°58'.4	11'.4	10'.9	10'.1	
118°58'.4	24'.4	130°28'.8	11'.5	00'.8	10'.2	
133°58'.5	23'.6	144°59'.3	11'.4	11°50'.6 N	10'.2	57'.0
148°58'.7	22'.8	159°29'.7	11'.5	40'.4	10'.3	
163°58'.8	22'.0	174°00'.2	11'.5	30'.1	10'.4	
178°58'.9	13°21'.2 N	188°30'.7	11'.5	11°19'.7 N	10'.4	57'.0
193°59'.1	20'.4	203°01'.2	11'.5	09'.3	10'.5	57'.1
208°59'.2	19'.6	217°31'.7	11'.5	10°58'.8 N	10'.6	
223°59'.3	18'.8	232°02'.2	11'.5	48'.2	10'.6	
238°59'.5	18'.0	246°32'.7	11'.5	37'.6	10'.7	
253°59'.6	17'.2	261°03'.2	11'.6	26'.9	10'.7	57'.2
268°59'.7	16'.4	275°33'.8	11'.5	16'.2	10'.9	
283°59'.9	15'.6	290°04'.3	11'.6	05'.3	10'.8	
299°00'.0	14'.8	304°34'.9	11'.5	9°54'.5 N	11'.0	
314°00'.1	14'.0	319°05'.4	11'.6	43'.5	11'.0	57'.3
329°00'.3	13'.2	333°36'.0	11'.5	32'.5	11'.0	
344°00'.4	12'.4	348°06'.5	11'.6	21'.5	11'.1	
359°00'.6	13°11'.6 N	2°37'.1	11'.6	9°10'.4 N	11'.2	57'.3
14°00'.7	10'.8	17°07'.7	11'.6	8°59'.2 N	11'.2	57'.4
29°00'.8	10'.0	31°38'.3	11'.6	48'.0	11'.3	
44°01'.0	09'.2	46°08'.9	11'.6	36'.7	11'.3	
59°01'.1	08'.4	60°39'.5	11'.5	25'.4	11'.4	
74°01'.2	07'.6	75°10'.0	11'.6	14'.0	11'.4	57'.5
89°01'.4	06'.8	89°40'.6	11'.6	02'.6	11'.5	
104°01'.5	06'.0	104°11'.2	11'.7	7°51'.1 N	11'.5	
119°01'.7	05'.2	118°41'.9	11'.6	39'.6	11'.6	
134°01'.8	04'.3	133°12'.5	11'.6	28'.0	11'.6	57'.6
149°01'.9	03'.5	147°43'.1	11'.6	16'.4	11'.6	
164°02'.1	02'.7	162°13'.7	11'.6	04'.8	11'.8	
179°02'.2	13°01'.9 N	176°44'.3	11'.6	6°53'.0 N	11'.7	57'.6
194°02'.3	01'.1	191°14'.9	11'.6	41'.3	11'.8	57'.7
209°02'.5	00'.3	205°45'.5	11'.6	29'.5	11'.9	
224°02'.6	12°59'.5 N	220°16'.1	11'.6	17'.6	11'.8	
239°02'.8	58'.7	234°46'.7	11'.6	05'.8	12'.0	
254°02'.9	57'.9	249°17'.3	11'.6	5°53'.8 N	11'.9	
269°03'.0	57'.1	263°47'.9	11'.6	41'.9	12'.0	57'.8
284°03'.2	56'.3	278°18'.5	11'.6	29'.9	12'.1	
299°03'.3	55'.4	292°49'.1	11'.6	17'.8	12'.0	
314°03'.5	54'.6	307°19'.7	11'.6	05'.8	12'.2	
329°03'.6	53'.8	321°50'.3	11'.6	4°53'.6 N	12'.1	57'.9
344°03'.7	53'.0	336°20'.9	11'.6	41'.5	12'.2	
359°03'.9	12°52'.2 N	350°51'.5	11'.5	4°29'.3 N	12'.2	57'.9
14°04'.0	51'.4	5°22'.0	11'.6	17'.1	12'.2	
29°04'.2	50'.6	19°52'.6	11'.6	04'.9	12'.3	
44°04'.3	49'.7	34°23'.2	11'.5	3°52'.6 N	12'.3	58'.0
59°04'.5	48'.9	48°53'.7	11'.6	40'.3	12'.3	
74°04'.6	48'.1	63°24'.3	11'.5	28'.0	12'.4	
89°04'.7	47'.3	77°54'.8	11'.5	15'.6	12'.3	
104°04'.9	46'.5	92°25'.3	11'.5	03'.3	12'.4	58'.1
119°05'.0	45'.7	106°55'.8	11'.5	2°50'.9 N	12'.5	
134°05'.2	44'.9	121°26'.3	11'.5	38'.4	12'.4	
149°05'.3	44'.0	135°56'.8	11'.5	26'.0	12'.5	
164°05'.5	43'.2	150°27'.3	11'.5	13'.5	12'.4	
SD 15'.8	d 0'.8	SD 15'.5		15'.6	15'.8	

Lat	Twilight Nautical	Twilight Civil	Sunrise	Moonrise 16	Moonrise 17	Moonrise 18
N 72°	-	-	02:40	01:01	03:11	05:11
N 70°	-	01:04	03:08	01:36	03:29	05:20
68°	-	02:01	03:29	02:00	03:44	05:27
66°	-	02:33	03:46	02:19	03:55	05:33
64°	00:57	02:56	03:59	02:34	04:05	05:37
62°	01:47	03:15	04:10	02:47	04:13	05:42
60°	02:17	03:29	04:20	02:57	04:20	05:45
N 58°	02:38	03:42	04:28	03:07	04:26	05:48
56°	02:56	03:53	04:35	03:15	04:32	05:51
54°	03:10	04:02	04:42	03:22	04:37	05:54
52°	03:22	04:10	04:48	03:28	04:41	05:56
50°	03:32	04:17	04:53	03:34	04:45	05:58
45°	03:54	04:33	05:04	03:46	04:54	06:03
N 40°	04:10	04:45	05:14	03:57	05:01	06:07
35°	04:23	04:55	05:22	04:05	05:07	06:10
30°	04:34	05:04	05:29	04:13	05:12	06:13
20°	04:51	05:18	05:41	04:26	05:22	06:18
N 10°	05:04	05:29	05:51	04:38	05:30	06:22
0°	05:15	05:39	06:01	04:49	05:38	06:26
S 10°	05:24	05:49	06:10	04:59	05:45	06:30
20°	05:32	05:58	06:20	05:11	05:53	06:35
30°	05:39	06:07	06:31	05:24	06:02	06:40
35°	05:42	06:12	06:38	05:31	06:08	06:42
40°	05:45	06:17	06:45	05:40	06:14	06:46
45°	05:49	06:23	06:54	05:50	06:21	06:49
S 50°	05:52	06:30	07:04	06:02	06:29	06:54
52°	05:54	06:33	07:08	06:07	06:33	06:56
54°	05:55	06:37	07:14	06:13	06:37	06:58
56°	05:57	06:40	07:19	06:20	06:42	07:01
58°	05:58	06:44	07:26	06:28	06:47	07:03
S 60°	06:00	06:49	07:33	06:36	06:53	07:06
S 62°	06:01	06:54	07:41	06:46	06:59	07:10

Lat	Sunset	Twilight Civil	Twilight Nautical	Moonset 16	Moonset 17	Moonset 18
N 72°	21:23	-	-	20:00	19:41	19:26
N 70°	20:56	22:51	-	19:40	19:30	19:22
68°	20:36	22:01	-	19:24	19:22	19:19
66°	20:20	21:31	-	19:11	19:14	19:17
64°	20:07	21:08	23:00	19:00	19:08	19:14
62°	19:56	20:51	22:16	18:51	19:02	19:12
60°	19:46	20:36	21:48	18:43	18:57	19:11
N 58°	19:38	20:24	21:27	18:36	18:53	19:09
56°	19:31	20:14	21:10	18:29	18:49	19:08
54°	19:25	20:05	20:56	18:24	18:46	19:06
52°	19:19	19:57	20:44	18:19	18:43	19:05
50°	19:14	19:49	20:34	18:14	18:40	19:04
45°	19:03	19:34	20:13	18:04	18:34	19:02
N 40°	18:54	19:22	19:57	17:56	18:28	19:00
35°	18:46	19:12	19:44	17:49	18:24	18:58
30°	18:39	19:04	19:33	17:42	18:20	18:57
20°	18:27	18:50	19:17	17:31	18:13	18:54
N 10°	18:17	18:38	19:04	17:21	18:07	18:52
0°	18:07	18:29	18:53	17:12	18:01	18:49
S 10°	17:58	18:19	18:44	17:03	17:55	18:47
20°	17:48	18:11	18:37	16:53	17:49	18:45
30°	17:37	18:01	18:30	16:41	17:41	18:42
35°	17:31	17:57	18:26	16:35	17:37	18:40
40°	17:23	17:51	18:23	16:27	17:32	18:38
45°	17:15	17:45	18:20	16:18	17:27	18:36
S 50°	17:05	17:38	18:16	16:08	17:20	18:34
52°	17:00	17:35	18:15	16:03	17:17	18:32
54°	16:55	17:32	18:14	15:57	17:13	18:31
56°	16:49	17:29	18:12	15:51	17:09	18:30
58°	16:43	17:25	18:11	15:44	17:05	18:28
S 60°	16:36	17:20	18:09	15:36	17:00	18:26
S 62°	16:28	17:15	18:08	15:27	16:55	18:24

Day	SUN Eqn. of Time 00h	SUN Eqn. of Time 12h	SUN Mer. Pass.	MOON Mer. Pass. Upper	MOON Mer. Pass. Lower	● Age/ Vis
16	4 17	4 11	12:04	11:00	23:25	28d 2%
17	4 05	3 58	12:04	11:49	24:13	29d 0%
18	3 51	3 45	12:04	12:38	00:13	1d 1%

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2012 August 19, 20, 21 (Sun, Mon, Tue)

GMT	ARIES	VENUS -4.3		MARS +1.2		JUPITER -2.3		SATURN +0.7	
	GHA	GHA	Dec	GHA	Dec	GHA	Dec	GHA	Dec
19 Sunday 00	327°44'.9	226°19'.5	20°00'.3 N	122°46'.5	10°45'.6 S	256°02'.0	21°34'.9 N	123°37'.3	7°31'.3 S
01	342°47'.4	241°19'.3	00'.3	137°47'.4	46'.2	271°04'.1	34'.9	138°39'.6	31'.4
02	357°49'.9	256°19'.2	00'.3	152°48'.4	46'.8	286°06'.2	35'.0	153°41'.9	31'.5
03	12°52'.3	271°19'.0	00'.3	167°49'.4	47'.4	301°08'.3	35'.0	168°44'.1	31'.6
04	27°54'.8	286°18'.9	00'.3	182°50'.4	48'.0	316°10'.4	35'.0	183°46'.4	31'.7
05	42°57'.3	301°18'.7	00'.3	197°51'.4	48'.6	331°12'.5	35'.1	198°48'.7	31'.7
06	57°59'.7	316°18'.5	00'.2	212°52'.3	49'.2	346°14'.6	35'.1	213°51'.0	31'.8
07	73°02'.2	331°18'.4	00'.2	227°53'.3	49'.8	1°16'.7	35'.2	228°53'.2	31'.9
08	88°04'.6	346°18'.2	00'.2	242°54'.3	50'.4	16°18'.8	35'.2	243°55'.5	32'.0
09	103°07'.1	1°18'.1	00'.2	257°55'.3	50'.9	31°20'.9	35'.2	258°57'.8	32'.1
10	118°09'.6	16°17'.9	00'.2	272°56'.2	51'.5	46°23'.1	35'.3	274°00'.1	32'.1
11	133°12'.0	31°17'.8	00'.2	287°57'.2	52'.1	61°25'.2	35'.3	289°02'.4	32'.2
12	148°14'.5	46°17'.6	20°00'.1 N	302°58'.2	10°52'.7 S	76°27'.3	21°35'.4 N	304°04'.6	7°32'.3 S
13	163°17'.0	61°17'.4	00'.1	317°59'.2	53'.3	91°29'.4	35'.4	319°06'.9	32'.4
14	178°19'.4	76°17'.3	00'.1	333°00'.2	53'.9	106°31'.5	35'.4	334°09'.2	32'.5
15	193°21'.9	91°17'.1	00'.1	348°01'.1	54'.5	121°33'.6	35'.5	349°11'.5	32'.6
16	208°24'.4	106°16'.9	00'.1	3°02'.1	55'.1	136°35'.7	35'.5	4°13'.7	32'.6
17	223°26'.8	121°16'.8	00'.0	18°03'.1	55'.7	151°37'.8	35'.6	19°16'.0	32'.7
18	238°29'.3	136°16'.6	00'.0	33°04'.1	56'.3	166°39'.9	35'.6	34°18'.3	32'.8
19	253°31'.8	151°16'.4	00'.0	48°05'.0	56'.9	181°42'.0	35'.6	49°20'.6	32'.9
20	268°34'.2	166°16'.3	00'.0	63°06'.0	57'.5	196°44'.1	35'.7	64°22'.8	33'.0
21	283°36'.7	181°16'.1	19°59'.9 N	78°07'.0	58'.1	211°46'.2	35'.7	79°25'.1	33'.0
22	298°39'.1	196°15'.9	59'.9	93°07'.9	58'.7	226°48'.3	35'.8	94°27'.4	33'.1
23	313°41'.6	211°15'.8	59'.9	108°08'.9	59'.3	241°50'.5	35'.8	109°29'.7	33'.2
20 Monday 00	328°44'.1	226°15'.6	19°59'.9 N	123°09'.9	10°59'.9 S	256°52'.6	21°35'.8 N	124°31'.9	7°33'.3 S
01	343°46'.5	241°15'.4	59'.8	138°10'.9	11°00'.5 S	271°54'.7	35'.9	139°34'.2	33'.4
02	358°49'.0	256°15'.3	59'.8	153°11'.8	01'.1	286°56'.8	35'.9	154°36'.5	33'.5
03	13°51'.5	271°15'.1	59'.8	168°12'.8	01'.7	301°58'.9	36'.0	169°38'.8	33'.5
04	28°53'.9	286°14'.9	59'.7	183°13'.8	02'.3	317°01'.0	36'.0	184°41'.0	33'.6
05	43°56'.4	301°14'.7	59'.7	198°14'.8	02'.9	332°03'.1	36'.0	199°43'.3	33'.7
06	58°58'.9	316°14'.6	59'.7	213°15'.7	03'.5	347°05'.2	36'.1	214°45'.6	33'.8
07	74°01'.3	331°14'.4	59'.6	228°16'.7	04'.1	2°07'.3	36'.1	229°47'.9	33'.9
08	89°03'.8	346°14'.2	59'.6	243°17'.7	04'.7	17°09'.5	36'.2	244°50'.1	33'.9
09	104°06'.2	1°14'.0	59'.6	258°18'.6	05'.3	32°11'.6	36'.2	259°52'.4	34'.0
10	119°08'.7	16°13'.9	59'.5	273°19'.6	05'.9	47°13'.7	36'.2	274°54'.7	34'.1
11	134°11'.2	31°13'.7	59'.5	288°20'.6	06'.5	62°15'.8	36'.3	289°57'.0	34'.2
12	149°13'.6	46°13'.5	19°59'.5 N	303°21'.5	11°07'.1 S	77°17'.9	21°36'.3 N	304°59'.2	7°34'.3 S
13	164°16'.1	61°13'.3	59'.4	318°22'.5	07'.7	92°20'.0	36'.3	320°01'.5	34'.4
14	179°18'.6	76°13'.1	59'.4	333°23'.5	08'.3	107°22'.1	36'.4	335°03'.8	34'.4
15	194°21'.0	91°13'.0	59'.4	348°24'.5	08'.9	122°24'.3	36'.4	350°06'.0	34'.5
16	209°23'.5	106°12'.8	59'.3	3°25'.4	09'.5	137°26'.4	36'.5	5°08'.3	34'.6
17	224°26'.0	121°12'.6	59'.3	18°26'.4	10'.1	152°28'.5	36'.5	20°10'.6	34'.7
18	239°28'.4	136°12'.4	59'.2	33°27'.4	10'.7	167°30'.6	36'.5	35°12'.9	34'.8
19	254°30'.9	151°12'.2	59'.2	48°28'.3	11'.2	182°32'.7	36'.6	50°15'.1	34'.9
20	269°33'.4	166°12'.0	59'.1	63°29'.3	11'.8	197°34'.8	36'.6	65°17'.4	34'.9
21	284°35'.8	181°11'.9	59'.1	78°30'.3	12'.4	212°36'.9	36'.7	80°19'.7	35'.0
22	299°38'.3	196°11'.7	59'.1	93°31'.2	13'.0	227°39'.1	36'.7	95°22'.0	35'.1
23	314°40'.7	211°11'.5	59'.0	108°32'.2	13'.6	242°41'.2	36'.7	110°24'.2	35'.2
21 Tuesday 00	329°43'.2	226°11'.3	19°59'.0 N	123°33'.2	11°14'.2 S	257°43'.3	21°36'.8 N	125°26'.5	7°35'.3 S
01	344°45'.7	241°11'.1	58'.9	138°34'.1	14'.8	272°45'.4	36'.8	140°28'.8	35'.4
02	359°48'.1	256°10'.9	58'.9	153°35'.1	15'.4	287°47'.5	36'.8	155°31'.0	35'.4
03	14°50'.6	271°10'.7	58'.8	168°36'.1	16'.0	302°49'.6	36'.9	170°33'.3	35'.5
04	29°53'.1	286°10'.6	58'.8	183°37'.0	16'.6	317°51'.8	36'.9	185°35'.6	35'.6
05	44°55'.5	301°10'.4	58'.7	198°38'.0	17'.2	332°53'.9	37'.0	200°37'.9	35'.7
06	59°58'.0	316°10'.2	58'.7	213°39'.0	17'.8	347°56'.0	37'.0	215°40'.1	35'.8
07	75°00'.5	331°10'.0	58'.6	228°39'.9	18'.4	2°58'.1	37'.0	230°42'.4	35'.9
08	90°02'.9	346°09'.8	58'.6	243°40'.9	19'.0	18°00'.2	37'.1	245°44'.7	35'.9
09	105°05'.4	1°09'.6	58'.5	258°41'.8	19'.6	33°02'.3	37'.1	260°46'.9	36'.0
10	120°07'.8	16°09'.4	58'.5	273°42'.8	20'.2	48°04'.5	37'.1	275°49'.2	36'.1
11	135°10'.3	31°09'.2	58'.4	288°43'.8	20'.8	63°06'.6	37'.2	290°51'.5	36'.2
12	150°12'.8	46°09'.0	19°58'.4 N	303°44'.7	11°21'.4 S	78°08'.7	21°37'.2 N	305°53'.7	7°36'.3 S
13	165°15'.2	61°08'.8	58'.3	318°45'.7	22'.0	93°10'.8	37'.3	320°56'.0	36'.3
14	180°17'.7	76°08'.6	58'.3	333°46'.7	22'.6	108°12'.9	37'.3	335°58'.3	36'.4
15	195°20'.2	91°08'.4	58'.2	348°47'.6	23'.2	123°15'.1	37'.3	351°00'.6	36'.5
16	210°22'.6	106°08'.2	58'.1	3°48'.6	23'.8	138°17'.2	37'.4	6°02'.8	36'.6
17	225°25'.1	121°08'.0	58'.1	18°49'.5	24'.3	153°19'.3	37'.4	21°05'.1	36'.7
18	240°27'.6	136°07'.8	58'.0	33°50'.5	24'.9	168°21'.4	37'.4	36°07'.4	36'.8
19	255°30'.0	151°07'.6	58'.0	48°51'.5	25'.5	183°23'.5	37'.5	51°09'.6	36'.9
20	270°32'.5	166°07'.4	57'.9	63°52'.4	26'.1	198°25'.7	37'.5	66°11'.9	36'.9
21	285°35'.0	181°07'.2	57'.9	78°53'.4	26'.7	213°27'.8	37'.6	81°14'.2	37'.0
22	300°37'.4	196°07'.0	57'.8	93°54'.3	27'.3	228°29'.9	37'.6	96°16'.4	37'.1
23	315°39'.9	211°06'.8	57'.7	108°55'.3	27'.9	243°32'.0	37'.6	111°18'.7	37'.2
	M.P. 02:01	v -0'.2	d 0'.0	v 1'.0	d 0'.6	v 2'.1	d 0'.0	v 2'.3	d 0'.1

STARS		
Name	SHA	Dec
Acamar	315°18'.7	40°15'.0 S
Achernar	335°26'.9	57°10'.0 S
Acrux	173°10'.5	63°10'.4 S
Adhara	255°13'.2	28°59'.3 S
Aldebaran	290°50'.1	16°32'.0 N
Alioth	166°21'.5	55°53'.7 N
Alkaid	152°59'.6	49°15'.3 N
Alnair	27°43'.9	46°53'.7 S
Alnilam	275°47'.1	1°11'.6 S
Alphard	217°57'.0	8°42'.8 S
Alphecca	126°11'.5	26°40'.6 N
Alpheratz	357°43'.8	29°09'.7 N
Altair	62°08'.5	8°54'.4 N
Ankaa	353°15'.9	42°13'.9 S
Antares	112°26'.9	26°27'.6 S
Arcturus	145°56'.4	19°07'.2 N
Atria	107°29'.0	69°03'.2 S
Avior	234°18'.8	59°33'.0 S
Bellatrix	278°32'.7	6°21'.6 N
Betelgeuse	271°02'.1	7°24'.5 N
Canopus	263°56'.7	52°42'.0 S
Capella	280°35'.4	46°00'.4 N
Deneb	49°31'.4	45°19'.8 N
Denebola	182°34'.5	14°30'.1 N
Diphda	348°56'.2	17°54'.8 S
Dubhe	193°53'.0	61°41'.0 N
Elnath	278°13'.5	28°36'.9 N
Eltanin	90°46'.1	51°29'.6 N
Enif	33°47'.3	9°56'.2 N
Fomalhaut	15°24'.2	29°33'.0 S
Gacrux	172°02'.0	57°11'.2 S
Gienah	175°53'.1	17°36'.8 S
Hadar	148°48'.9	60°26'.3 S
Hamal	328°01'.2	23°31'.3 N
Kaus Aust.	83°44'.3	34°22'.6 S
Kochab	137°20'.3	74°06'.5 N
Markab	13°38'.6	15°16'.6 N
Menkar	314°15'.6	4°08'.4 N
Menkent	148°08'.4	36°26'.0 S
Miaplacidus	221°40'.7	69°46'.2 S
Mirfak	308°41'.1	49°54'.2 N
Nunki	75°58'.7	26°16'.7 S
Peacock	53°19'.5	56°41'.5 S
Polaris	317°56'.5	89°18'.8 N
Pollux	243°28'.7	27°59'.6 N
Procyon	245°00'.6	5°11'.5 N
Rasalhague	96°06'.8	12°33'.3 N
Regulus	207°44'.4	11°54'.3 N
Rigel	281°12'.7	8°11'.2 S
Rigil Kent	139°52'.6	60°53'.4 S
Sabik	102°13'.0	15°44'.3 S
Schedar	349°40'.7	56°36'.4 N
Shaula	96°22'.5	37°06'.7 S
Sirius	258°34'.4	16°44'.0 S
Spica	158°32'.0	11°13'.6 S
Suhail	222°53'.3	43°29'.0 S
Vega	80°39'.0	38°48'.1 N
Zuben'ubi	137°06'.1	16°05'.6 S

	SHA	Mer.Pass.
Venus	257°31'.5	08:55
Mars	154°25'.8	15:46
Jupiter	288°08'.5	06:52
Saturn	155°47'.9	15:39

SUN		MOON				
GHA	Dec	GHA	v	Dec	d	HP
179°05'.6	12°42'.4 N	164°57'.8	11'.4	2°01'.1 N	12'.5	58'.2
194°05'.7	41'.6	179°28'.2	11'.5	1°48'.6 N	12'.6	
209°05'.9	40'.8	193°58'.7	11'.4	36'.0	12'.5	
224°06'.0	40'.0	208°29'.1	11'.4	23'.5	12'.5	
239°06'.2	39'.1	222°59'.5	11'.4	11'.0	12'.6	
254°06'.3	38'.3	237°29'.9	11'.4	0°58'.4 N	12'.6	58'.3
269°06'.5	37'.5	252°00'.3	11'.4	45'.8	12'.6	
284°06'.6	36'.7	266°30'.7	11'.3	33'.2	12'.6	
299°06'.8	35'.9	281°01'.0	11'.3	20'.6	12'.6	
314°06'.9	35'.0	295°31'.3	11'.3	08'.0	12'.6	
329°07'.1	34'.2	310°01'.6	11'.3	0°04'.6 S	12'.6	58'.4
344°07'.2	33'.4	324°31'.9	11'.3	17'.2	12'.6	
359°07'.3	12°32'.6 N	339°02'.2	11'.3	0°29'.8 S	12'.7	58'.4
14°07'.5	31'.7	353°32'.5	11'.2	42'.5	12'.6	
29°07'.6	30'.9	8°02'.7	11'.2	55'.1	12'.6	
44°07'.8	30'.1	22°32'.9	11'.2	1°07'.7 S	12'.7	
59°07'.9	29'.3	37°03'.1	11'.1	20'.4	12'.6	58'.5
74°08'.1	28'.5	51°33'.2	11'.2	33'.0	12'.7	
89°08'.2	27'.6	66°03'.4	11'.1	45'.7	12'.6	
104°08'.4	26'.8	80°33'.5	11'.1	58'.3	12'.6	
119°08'.5	26'.0	95°03'.6	11'.0	2°10'.9 S	12'.6	
134°08'.7	25'.2	109°33'.6	11'.0	23'.5	12'.6	58'.6
149°08'.8	24'.3	124°03'.6	11'.1	36'.1	12'.7	
164°09'.0	23'.5	138°33'.7	10'.9	48'.8	12'.5	
179°09'.1	12°22'.7 N	153°03'.6	11'.0	3°01'.3 S	12'.6	58'.6
194°09'.3	21'.9	167°33'.6	10'.9	13'.9	12'.6	
209°09'.4	21'.0	182°03'.5	10'.9	26'.5	12'.6	
224°09'.6	20'.2	196°33'.4	10'.9	39'.1	12'.5	
239°09'.7	19'.4	211°03'.3	10'.8	51'.6	12'.6	58'.7
254°09'.9	18'.6	225°33'.1	10'.8	4°04'.2 S	12'.5	
269°10'.0	17'.7	240°02'.9	10'.7	16'.7	12'.5	
284°10'.2	16'.9	254°32'.6	10'.8	29'.2	12'.5	
299°10'.3	16'.1	269°02'.4	10'.7	41'.7	12'.4	
314°10'.5	15'.2	283°32'.1	10'.6	54'.1	12'.5	
329°10'.6	14'.4	298°01'.7	10'.7	5°06'.6 S	12'.4	58'.8
344°10'.8	13'.6	312°31'.4	10'.5	19'.0	12'.4	
359°10'.9	12°12'.8 N	327°00'.9	10'.6	5°31'.4 S	12'.3	58'.8
14°11'.1	11'.9	341°30'.5	10'.5	43'.7	12'.4	
29°11'.2	11'.1	356°00'.0	10'.5	56'.1	12'.3	
44°11'.4	10'.3	10°29'.5	10'.4	6°08'.4 S	12'.3	
59°11'.5	09'.4	24°58'.9	10'.5	20'.7	12'.2	
74°11'.7	08'.6	39°28'.4	10'.3	32'.9	12'.2	
89°11'.8	07'.8	53°57'.7	10'.3	45'.1	12'.2	58'.9
104°12'.0	06'.9	68°27'.0	10'.3	57'.3	12'.2	
119°12'.1	06'.1	82°56'.3	10'.3	7°09'.5 S	12'.1	
134°12'.3	05'.3	97°25'.6	10'.2	21'.6	12'.0	
149°12'.4	04'.4	111°54'.8	10'.1	33'.6	12'.1	
164°12'.6	03'.6	126°23'.9	10'.1	45'.7	12'.0	
179°12'.8	12°02'.8 N	140°53'.0	10'.1	7°57'.7 S	11'.9	58'.9
194°12'.9	01'.9	155°22'.1	10'.1	8°09'.6 S	12'.0	
209°13'.1	01'.1	169°51'.2	9'.9	21'.6	11'.8	59'.0
224°13'.2	00'.3	184°20'.1	10'.0	33'.4	11'.9	
239°13'.4	11°59'.4 N	198°49'.1	9'.9	45'.3	11'.7	
254°13'.5	58'.6	213°18'.0	9'.8	57'.0	11'.8	
269°13'.7	57'.8	227°46'.8	9'.8	9°08'.8 S	11'.7	
284°13'.8	56'.9	242°15'.6	9'.8	20'.5	11'.6	
299°14'.0	56'.1	256°44'.4	9'.7	32'.1	11'.6	
314°14'.2	55'.3	271°13'.1	9'.6	43'.7	11'.5	
329°14'.3	54'.4	285°41'.7	9'.7	55'.2	11'.5	
344°14'.5	53'.6	300°10'.4	9'.5	10°06'.7 S	11'.4	59'.1
359°14'.6	11°52'.8 N	314°38'.9	9'.5	10°18'.1 S	11'.4	59'.1
14°14'.8	51'.9	329°07'.4	9'.5	29'.5	11'.3	
29°14'.9	51'.1	343°35'.9	9'.4	40'.8	11'.3	
44°15'.1	50'.2	358°04'.3	9'.4	52'.1	11'.1	
59°15'.2	49'.4	12°32'.7	9'.3	11°03'.2 S	11'.2	
74°15'.4	48'.6	27°01'.0	9'.3	14'.4	11'.0	
89°15'.6	47'.7	41°29'.3	9'.2	25'.4	11'.0	
104°15'.7	46'.9	55°57'.5	9'.1	36'.4	11'.0	
119°15'.9	46'.0	70°25'.6	9'.1	47'.4	10'.9	
134°16'.0	45'.2	84°53'.7	9'.1	58'.3	10'.8	
149°16'.2	44'.4	99°21'.8	9'.0	12°09'.1 S	10'.7	
164°16'.4	43'.5	113°49'.8	8'.9	19'.8	10'.6	59'.2
SD 15'.8	d 0'.8	SD	15'.9	16'.0	16'.1	

Lat	Twilight Nautical	Twilight Civil	Sunrise	Moonrise 19	Moonrise 20	Moonrise 21
N 72°	-	-	02:59	07:10	09:10	11:16
N 70°	-	01:39	03:23	07:10	09:02	10:59
68°	-	02:20	03:41	07:11	08:56	10:45
66°	-	02:47	03:56	07:11	08:51	10:34
64°	01:27	03:08	04:08	07:11	08:47	10:24
62°	02:04	03:24	04:18	07:12	08:43	10:16
60°	02:29	03:38	04:27	07:12	08:40	10:10
N 58°	02:48	03:49	04:35	07:12	08:37	10:04
56°	03:04	03:59	04:41	07:12	08:35	09:58
54°	03:17	04:08	04:47	07:13	08:33	09:54
52°	03:28	04:16	04:53	07:13	08:31	09:49
50°	03:38	04:22	04:58	07:13	08:29	09:46
45°	03:58	04:37	05:08	07:13	08:25	09:37
N 40°	04:14	04:48	05:17	07:13	08:21	09:30
35°	04:26	04:57	05:24	07:14	08:19	09:25
30°	04:36	05:06	05:30	07:14	08:16	09:19
20°	04:52	05:19	05:41	07:14	08:12	09:10
N 10°	05:04	05:30	05:51	07:15	08:08	09:03
0°	05:14	05:39	06:00	07:15	08:05	08:56
S 10°	05:22	05:47	06:09	07:15	08:01	08:48
20°	05:30	05:55	06:18	07:16	07:58	08:41
30°	05:36	06:04	06:28	07:16	07:53	08:32
35°	05:39	06:08	06:34	07:17	07:51	08:27
40°	05:42	06:13	06:41	07:17	07:49	08:22
45°	05:44	06:19	06:49	07:17	07:46	08:16
S 50°	05:47	06:25	06:58	07:18	07:42	08:08
52°	05:48	06:27	07:02	07:18	07:40	08:04
54°	05:49	06:30	07:07	07:18	07:39	08:01
56°	05:50	06:34	07:12	07:18	07:37	07:56
58°	05:51	06:37	07:18	07:19	07:34	07:52
S 60°	05:52	06:41	07:25	07:19	07:32	07:47
S 62°	05:53	06:45	07:32	07:19	07:29	07:41

Lat	Sunset	Twilight Civil	Twilight Nautical	Moonset 19	Moonset 20	Moonset 21
N 72°	21:03	-	-	19:11	18:56	18:37
N 70°	20:40	22:20	-	19:14	19:06	18:57
68°	20:22	21:42	-	19:17	19:14	19:12
66°	20:08	21:15	-	19:19	19:21	19:25
64°	19:56	20:55	22:33	19:20	19:27	19:35
62°	19:46	20:40	21:58	19:22	19:32	19:44
60°	19:38	20:26	21:34	19:23	19:37	19:52
N 58°	19:30	20:15	21:15	19:24	19:40	19:59
56°	19:24	20:06	21:00	19:25	19:44	20:05
54°	19:18	19:57	20:47	19:26	19:47	20:11
52°	19:13	19:50	20:36	19:27	19:50	20:16
50°	19:08	19:43	20:27	19:28	19:53	20:20
45°	18:58	19:29	20:07	19:30	19:59	20:30
N 40°	18:49	19:18	19:52	19:31	20:03	20:38
35°	18:42	19:08	19:40	19:32	20:08	20:45
30°	18:36	19:00	19:30	19:33	20:11	20:51
20°	18:25	18:47	19:14	19:35	20:18	21:02
N 10°	18:15	18:37	19:02	19:37	20:23	21:12
0°	18:07	18:28	18:52	19:38	20:29	21:21
S 10°	17:58	18:19	18:44	19:40	20:34	21:29
20°	17:49	18:11	18:37	19:42	20:40	21:39
30°	17:39	18:03	18:31	19:43	20:46	21:50
35°	17:33	17:59	18:28	19:45	20:50	21:56
40°	17:26	17:54	18:26	19:46	20:54	22:04
45°	17:18	17:49	18:23	19:47	20:59	22:12
S 50°	17:09	17:43	18:20	19:49	21:05	22:22
52°	17:05	17:40	18:19	19:49	21:08	22:27
54°	17:00	17:37	18:18	19:50	21:11	22:32
56°	16:55	17:34	18:17	19:51	21:14	22:38
58°	16:49	17:30	18:16	19:52	21:18	22:44
S 60°	16:43	17:27	18:15	19:53	21:22	22:52
S 62°	16:36	17:22	18:14	19:55	21:27	23:00

Day	SUN Eqn. of Time 00h	SUN Eqn. of Time 12h	SUN Mer. Pass.	MOON Mer. Pass. Upper	MOON Mer. Pass. Lower	MOON Age/ Vis
19	3 38	3 31	12:04	13:27	01:02	2d 4%
20	3 24	3 17	12:03	14:17	01:51	3d 10%
21	3 09	3 02	12:03	15:08	02:42	4d 18%

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